

1 **Abstract**

2 A device for use in a modem configuration that enables the transfer of data from a host
3 signal processor (HSP) to an A/D-D/A converter or CODEC with less data loss, with low noise
4 and that can send data at varying carrier frequencies without changing the size of the buffers.
5 The device further allows for data transfer that is flexible with any given modulation scheme,
6 carrier frequency or baud frequency to conform with the V.34, V90, as well as prior and
7 subsequent recommendations. The device further includes a counter for counting the number of
8 data samples transferred between the CODEC and the HSP and for alerting the HSP to avoid an
9 overflow condition. The counter is further configured to count beyond the physical size of the
10 buffer in order to simplify operation in an overflow condition. A transmit buffer is included for
11 transferring data from the HSP to the CODEC. Communicating with the HSP and the CODEC is
12 another counter that, similar to the first counter, counts the data sent from the HSP to the
13 CODEC. A threshold is established to activate a null signal generator connected to the output of
14 the transmit buffer by a switch to send a null signal to the CODEC when there is no data in the
15 transmit buffer to help maintain the communication link between the CODEC and the data
16 transfer system at lower power. Once data is again available in the transmit buffer, the switch
17 resumes communication between the transmit buffer and the CODEC. Furthermore, the transmit
18 buffer is synchronized with the receive buffer to allow seamless echo cancellation procedures to
19 be performed by the HSP. The echo cancellation performed by the HSP can now be consistent
20 both during normal operation as well as while the receive buffer is in an overflow condition.